

REMARKS

By the instant Amendment, the subject matter of claim 2 has been incorporated into claim 1 and claim 2 has accordingly been canceled without prejudice or disclaimer. Since the subject matter of claim 2 was previously considered, no new issues are raised by the amendment to claim 1 and entry of the instant Amendment is therefore proper and in order.

Sole independent claim 1 relates to a metal laminate comprising a layer of a resin composition obtained by compounding a bismaleimide compound represented by defined formula (1) in a polyamic acid and/or a polyimide that is combined with a metal foil layer (which is further defined in claim 7 as having a thickness of not greater than 150 μm) and one or more polyimide films wherein the metal laminate has a structure in which the layer of the resin composition is formed on one surface or both surfaces of one or more polyimide films and the metal foil layer is formed on one surface or both surfaces of the layer of the resin composition. This type of structure is illustrated starting with Example 5 and is shown to provide advantageous properties particularly solder heat resistance.

The bismaleimide compound defined in claim 1 includes the provision that the substitution position is in the meta-position. The relevance of this feature is set forth in the specification and is supported by the Declaration submitted with the response filed on March 17, 2006. The Declaration demonstrates that the defined bismaleimide provides superior peel strength compared to a compound that does not include the recited meta-position.

The improved solder heat resistance which can be attained in accordance with the present invention is described in the paragraph bridging pages 24 and 25 of

the specification. This important feature is distinct from other properties and cannot necessarily be discerned by considering properties such as shear strength. To place this understanding into greater perspective, the Examiner's attention is respectfully directed to the further Declaration Under 37 C.F.R. §1.132 provided herewith. As may be seen from the Declaration, the materials of Examples 13, 15 and 17 of one of the cited patents (Yamaya et al., U.S. Patent No. 4,987,207) were analyzed with respect to solder heat resistance and it can be readily determined that the solder heat resistance does not correlate with the stated tensile shear strengths disclosed in the patent.

Based on the claims and evidence of record, applicants respectfully submit that the combinations of prior art relied on by the Examiner in the Action would not lead to the presently claimed invention or an appreciation of the superior results which can be obtained therefrom. Neither Yamaya et al. nor Matsuura et al., U.S. Patent No. 5,508,357, discloses or suggests the claimed metal laminate with the defined bismaleimide and neither patent in any way recognizes the importance of the defined polymaleimide of formula (1) which specifies that X or N has a substitution position of meta to that of another X or N that is bonded to the same benzene ring. Moreover, neither patent in any way recognizes the noted advantages that can be attained by the presently claimed invention, such as improved solder heat resistance.

The Examiner has recognized on page 2 of the Official Action that Yamaya et al. does not teach laminates with metal foils or polyimides and metal foils and this recognition is particularly relevant now that the claims specifically recite a laminate with the defined resin composition, metal foil and polyimide layer(s). The Examiner's

reference to the manner of preparing adhesive films by casting a composition on to plate materials such as described in the paragraph starting at column 5, line 44, has nothing to do with a formed laminate and particularly the laminate as defined in the claims of record.

With respect to the Examiner's reliance on Examples 16 and 17 of Yamaya et al., this is clearly an instance where the Examiner has improperly relied on applicants' own specification to piece together the rejections set forth in the Action. The Examiner has attempted to justify the reliance on these isolated Examples on page 5 of the Action by referring to lower softening points and higher tensile shear strengths than those compositions which contain N,N'-diphenylmethane bismaleimide that is used in Example 4 of Matsuura et al. Such reliance is incorrect as Examples 3-5 of Yamaya et al. illustrate compositions containing the same amount of the bismaleimide compound, N,N'-diphenylmethane bismaleimide as used in Examples 16 and 17, and provide even lower softening points than one or both of the compositions of Examples 16 and 17 and comparable tensile strengths.

Yamaya et al. is totally silent with respect to solder heat resistance or the importance thereof in the context of the presently claimed invention. Furthermore, as explained above with respect to the Declaration submitted herewith, there is no correlation between the tensile strength disclosed in the patent and the actual solder heat resistance that can be obtained. Thus, this represents further evidence of the patentability of the present invention that cannot be ignored.

The Examiner has attempted to bridge the considerable deficiencies of Yamaya et al. by relying on Matsuura et al. to show metal foil laminates. However, Matsuura et al. seeks to provide a polyimide having excellent solubility in organic

solvents and a low softening point, as well as a composition which can be molded, extruded or cured at low temperatures. As such, it will be evident to those of ordinary skill in the art that the respective patents have different objects and thus provide different compositions. While Matsuura et al. mentions laminates in column 11, it does not illustrate the laminate of claim 1 in any one of the Examples of the patent.

If anything, Matsuura et al. would lead away from the claimed bismaleimide by setting forth a list of polymaleimides starting at column 8, line 50, none of which meet the claimed bismaleimide. Moreover, given the fact that given the fact that Matsuura et al. and Yamaya et al. both disclose maleimide compounds (e.g., N,N'-diphenylmethane bismaleimide) which do not meet the bismaleimide of the present invention, those of ordinary skill in the art, if anything, would be led to use such distinct maleimide compounds.

Matsuura et al. also does not recognize that by following the teachings of the present invention, one can obtain a laminate that can provide improved solder heat resistance as shown by the evidence of record. Moreover, since this feature is not evident from other characteristics of the composition, particularly tensile shear strength, those of ordinary skill in the art would not understand from the combined teachings of the cited patents that such improvement can be achieved. This is true whether one considers Yamaya et al. in view of Matsuura et al. or vice versa.

As for the Examiner's citation to the Chemical Dictionary to show that stainless steel comprises metals, applicants will not dispute this point. However, the document provides no additional reason for combining the patents and no recognition of the substantial advantages which can be attained by the present

invention. In fact, the Examiner's continued reference to the application of a resin composition on a stainless steel plate in Yamaya et al. in paragraph 12 of the Action, is totally inapposite. The stainless steel plate disclosed in column 5 lines 47-51 of Yamaya et al. is just a support member on which the resin compositions is cast in order to form the uncured resin. The stainless steel corresponds to the glass plate in Example 4, of Matsuura et al. This can be understood from the description in Yamaya et al. at column 5 lines 48-49 where the stainless steel is described in parallel with the glass plate, which means that the stainless steel functions as a support member the same as the glass plate.

Applicants also note that the stainless steel described in the examples of Yamaya et al. at column 6, line 57, is different from the foil of the present invention. The stainless steel of Yamaya et al. is a test member defined to be used in a JIS (Japanese Industrial Standards) measurement. It means that although Yamaya et al. discloses that the resin is placed on the stainless steel, the stainless steel of Yamaya et al. is totally different from the metal foil of the present invention. This can also be understood from the description of Example 1 of Yamaya et al. (column 6 lines 45 - 61) that the uncured film was formed on the glass plate, which corresponds to the stainless steel plate of the description at column 5 lines 48 and 49 of Yamaya et al., and then heated after being inserted between preheated steel sheets (the cold rolled steel used in JIS-K-6848 and JIS-K-6850). Yamaya et al. does not teach the application of a layer of resin composition to a metal foil and clearly does not teach a metal laminate of a layer of the defined resin composition, metal foil and one or more polyimide films as recited in claim 1. Thus, applicants maintain that the Examiner's

reliance on the stainless steel plate of Yamaya et al., with or without the Chemical Dictionary reference does not adversely affect the patentability of any of the claims.

For all the reasons provided above, applicants respectfully maintain that the presently claimed invention is patentable over the cited prior art, particularly in view of the evidence of record and therefore request reconsideration and allowance of the present application.

Should the Examiner have any questions concerning the subject application, the Examiner is invited to contact the undersigned attorney at the number provided below.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

By: Robert G. Mukai
Robert G. Mukai
Registration No. 28,531

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-662

Date: February 15, 2007